

WHAT IS CLAIMED IS:

1. A method of communicating, comprising the steps of:

detecting one of a predetermined set of abnormal conditions at a plurality of managed
5 devices;

transmitting abnormal condition information on the detected abnormal condition from the
managed device to the management device;

receiving the abnormal condition information at the management device to store and
manage the received abnormal condition information;

10 detecting removal of the previously detected abnormal condition from a corresponding
one of the managed devices, the corresponding managed device defining an originating managed
device;

transmitting from the managed device to the management device an abnormal condition
removal call corresponding to the previously detected abnormal condition;

15 receiving the abnormal condition removal call at the management device; and

deleting a corresponding one of the abnormal condition information stored at the
management device based upon the received abnormal condition removal call.

2. The method of communicating according to claim 1 wherein the abnormal condition

20 information being distinct for each of the managed devices, the abnormal condition information
being stored and managed for each of the managed devices at the management device.

3. The method of communicating according to claim 2 wherein the abnormal condition includes
a plurality of abnormal condition types, the abnormal condition removal call being distinct for

25 each of the abnormal condition types.

4. The method of communicating according to claim 1 wherein the abnormal condition removal call indicates the removal of all of the abnormal conditions at a single one of the managed devices.
- 5 5. The method of communicating according to claim 1 further comprising an additional step of notifying a center operator of the detected abnormal condition if the corresponding abnormal condition removal call has not been received within a first predetermined amount of time t1 since the reception of the abnormal condition information at the management device.
- 10 6. The method of communicating according to claim 1 further comprising additional steps of:
 sending a power activation report from the originating managed device to the management device upon temporarily switching off a main power supply of the managed device for subsequent power activation prior to said detecting of the removal of the previously detected abnormal condition from the managed device;
- 15 receiving the power activation report at the management device; and
 notifying a center operator of the detected abnormal condition if the power activation report has been received within a first predetermined amount of time t1 since the reception of the abnormal condition information at the management device and the corresponding abnormal condition removal call has not been received from the originating managed device within a
- 20 second predetermined amount of time t2 since the reception of the power activation report at the management device.
7. The method of communicating according to claim 1 further comprising additional steps of :
 sending a power activation report from the originating managed device to the
- 25 management device upon temporarily switching off a main power supply of the managed device for subsequent power activation prior to said detecting of the removal of the previously detected abnormal condition from the managed device;
 receiving the power activation report at the management device; and

determining that the previously detected abnormal condition has not been removed by the temporarily switching off of the main power supply of the originating managed device if the corresponding abnormal condition removal call has not been received from the originating managed device within a second predetermined amount of time t_2 since the reception of the power activation report at the management device.

8. The method of communicating according to claim 7 wherein if the power activation report has been received within a first predetermined amount of time t_1 since the reception of the abnormal condition information at the management device, claim 8 further comprising an additional step of notifying a center operator of the detected abnormal condition.

9. The method of communicating according to any one of claims 5, 6 and 8 further comprising additional steps of:

storing user information for each of the managed devices at the management device; and determining the first predetermined amount of time t_1 based upon the stored user information.

10. The method of communicating according to any one of claims 6 and 8 further comprising additional steps of:

storing device information for each of the managed devices at the management device; and determining the second predetermined amount of time t_2 based upon the stored device information.

11. The method of communicating according to claim 1 wherein the abnormal condition information, the abnormal condition removal call and the power activation report are written in a predetermined structured language.

12. A software program containing computer readable instructions for performing the tasks of communicating, the instructions performing the tasks of:

detecting one of a predetermined set of abnormal conditions at a plurality of managed devices;

5 transmitting abnormal condition information on the detected abnormal condition from the managed device to the management device;

receiving the abnormal condition information at the management device to store and manage the received abnormal condition information;

10 detecting removal of the previously detected abnormal condition from a corresponding one of the managed devices, the corresponding managed device defining an originating managed device;

transmitting from the managed device to the management device an abnormal condition removal call corresponding to the previously detected abnormal condition;

receiving the abnormal condition removal call at the management device; and

15 deleting a corresponding one of the abnormal condition information stored at the management device based upon the received abnormal condition removal call.

13. The software program containing computer readable instructions according to claim 12 wherein the abnormal condition information being distinct for each of the managed devices, the
20 abnormal condition information being stored and managed for each of the managed devices at the management device.

14. The software program containing computer readable instructions according to claim 13 wherein the abnormal condition includes a plurality of abnormal condition types, the abnormal
25 condition removal call being distinct for each of the abnormal condition types.

15. The software program containing computer readable instructions according to claim 12 wherein the abnormal condition removal call indicates the removal of all of the abnormal conditions at a single one of the managed devices.

- 5 16. The software program containing computer readable instructions according to claim 12 further comprising an additional task of notifying a center operator of the detected abnormal condition when the corresponding abnormal condition removal call has not been received within a first predetermined amount of time t1 since the reception of the abnormal condition information at the management device.

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17. The software program containing computer readable instructions according to claim 12 further comprising additional tasks of:

15 sending a power activation report from the originating managed device to the management device upon temporarily switching off a main power supply of the managed device for subsequent power activation prior to said detecting of the removal of the previously detected abnormal condition from the managed device;

receiving the power activation report at the management device; and

- 20 notifying a center operator of the detected abnormal condition if the power activation report has been received within a first predetermined amount of time t1 since the reception of the abnormal condition information at the management device and the corresponding abnormal condition removal call has not been received from the originating managed device within a second predetermined amount of time t2 since the reception of the power activation report at the management device.

- 25 18. The software program containing computer readable instructions according to claim 12 further comprising additional tasks of :

sending a power activation report from the originating managed device to the management device upon temporarily switching off a main power supply of the managed device

for subsequent power activation prior to said detecting of the removal of the previously detected abnormal condition from the managed device;

receiving the power activation report at the management device; and

5 determining that the previously detected abnormal condition has not been removed by the temporarily switching off of the main power supply of the originating managed device if the corresponding abnormal condition removal call has not been received from the originating managed device within a second predetermined amount of time t2 since the reception of the power activation report at the management device.

10 19. The software program containing computer readable instructions according to claim 18 wherein if the power activation report has been received within a first predetermined amount of time t1 since the reception of the abnormal condition information at the management device, claim 19 further comprising an additional task of notifying a center operator of the detected abnormal condition.

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20. The software program containing computer readable instructions according to any one of claims 16, 17 and 19 further comprising additional tasks of:

storing user information for each of the managed devices at the management device; and

20 determining the first predetermined amount of time t1 based upon the stored user information.

21. The software program containing computer readable instructions according to any one of claims 17 and 19 further comprising additional tasks of:

storing device information for each of the managed devices at the management device;

25 and

determining the second predetermined amount of time t2 based upon the stored device information.

22. The software program containing computer readable instructions according to claim 12 wherein the abnormal condition information, the abnormal condition removal call and the power activation report are written in a predetermined structured language.

- 5 23. A management apparatus for remotely managing a plurality of predetermined managed apparatuses over a computer network, each of the managed apparatuses including an abnormal condition reporting unit for reporting to the management apparatus abnormal condition information on an abnormal condition that is detected in the managed apparatus and a abnormal condition removal reporting unit for reporting to the management apparatus abnormal condition removal information if the detected abnormal condition has been removed in the managed apparatus, a corresponding one of the managed apparatus that is transmitting the abnormal condition removal information defining an originating managed apparatus, comprising:
- 10 a communication unit for communicating with the managed apparatuses for receiving the abnormal condition information and the abnormal condition removal information;
- 15 an abnormal condition information management unit connected to said communication unit for storing and managing the abnormal condition information that is received from the managed apparatuses; and
- an abnormal condition removal determination unit connected to said abnormal condition information management unit and said communication unit for determining whether or not the abnormal condition has been removed from the managed apparatus based upon the abnormal condition removal information.
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24. The management apparatus according to claim 23 wherein the abnormal condition information being distinct for each of the managed apparatuses, said abnormal condition information management unit managing the abnormal condition information for each of the managed apparatuses.
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25. The management apparatus according to claim 24 wherein the abnormal condition includes a plurality of abnormal condition types, the abnormal condition removal information being distinct for each of the abnormal condition types.

5 26. The management apparatus according to claim 23 wherein the abnormal condition removal information indicates the removal of all of the abnormal conditions at a single one of the managed apparatuses.

10 27. The management apparatus according to claim 23 further comprising an abnormal condition notifying unit for notifying a center operator of the detected abnormal condition when the corresponding abnormal condition removal information has not been received within a first predetermined amount of time t_1 since the reception of the abnormal condition information at the management apparatus.

15 28. The management apparatus according to claim 23 wherein said communication unit receives a power activation report at the management apparatus from the originating managed apparatus after a main power supply of the originating managed apparatus had been temporarily switched off for subsequent power activation prior to receiving the abnormal condition removal information, claim 28 further comprising an abnormal condition notifying unit for notifying a
20 center operator of the detected abnormal condition if the power activation report has been received within a first predetermined amount of time t_1 since the reception of the abnormal condition information at the management apparatus and the corresponding abnormal condition removal information has not been received from the originating managed apparatus within a second predetermined amount of time t_2 since the reception of the power activation report at the
25 management apparatus.

29. The management apparatus according to claim 23 wherein said communication unit receives a power activation report at the management apparatus from the originating managed apparatus

after a main power supply of the originating managed apparatus had been temporarily switched off for subsequent power activation prior to receiving the abnormal condition removal information, said abnormal condition removal determination unit determining that the previously detected abnormal condition has not been removed by the temporarily switching off of the main power supply of the originating managed apparatus if the corresponding abnormal condition removal information has not been received from the originating managed apparatus within a second predetermined amount of time t_2 since the reception of the power activation report at the management apparatus.

30. The management apparatus according to claim 29 wherein if the power activation report has been received within a first predetermined amount of time t_1 since the reception of the abnormal condition information at the management apparatus, claim 30 further comprising an abnormal condition notifying unit for notifying a center operator of the detected abnormal condition.

31. The management apparatus according to any one of claims 27, 28 and 30 further comprising:
a user information storing unit connected to said abnormal condition removal determination unit for storing user information for each of the managed apparatuses, said abnormal condition removal determination unit determining the first predetermined amount of time t_1 based upon the stored user information.

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32. The management apparatus according to any one of claims 28 and 30 further comprising:
a device information storing unit connected to said abnormal condition removal determination unit for storing device information for each of the managed apparatuses, said abnormal condition removal determination unit determining the second predetermined amount of time t_2 based upon the stored device information.

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33. The management apparatus according to claim 23 wherein the abnormal condition information, the abnormal condition removal call and the power activation report are written in a predetermined structured language.

5 34. A remote management system for managing devices over a computer network, comprising: a plurality of predetermined managed apparatuses, each of the managed apparatuses further comprising:

a first communication unit for communicating with devices;

a detection unit for detecting an abnormal condition within the managed

10 apparatus;

an abnormal condition reporting unit connected to said first communication unit for reporting abnormal condition information on the detected abnormal condition; and

a abnormal condition removal reporting unit connected to said first communication unit for reporting abnormal condition removal information if the detected

15 abnormal condition has been removed in the managed apparatus, a corresponding one of the managed apparatus that is transmitting the abnormal condition removal information defining an originating managed apparatus;

a management apparatus comprising:

a second communication unit for communicating with the managed apparatuses

20 for receiving the abnormal condition information and the abnormal condition removal information;

an abnormal condition information management unit connected to said second communication unit for storing and managing the abnormal condition information that is received from the managed apparatuses; and

25 an abnormal condition removal determination unit connected to said abnormal condition information management unit and said second communication unit for determining whether or not the abnormal condition has been removed from the managed apparatus based upon the abnormal condition removal information.

35. The remote management system according to claim 34 wherein the abnormal condition information being distinct for each of the managed apparatuses, said abnormal condition information management unit managing the abnormal condition information for each of the managed apparatuses.

36. The remote management system according to claim 35 wherein the abnormal condition includes a plurality of abnormal condition types, the abnormal condition removal information being distinct for each of the abnormal condition types.

37. The remote management system according to claim 34 wherein the abnormal condition removal information indicates the removal of all of the abnormal conditions at a single one of the managed apparatuses.

38. The remote management system according to claim 34 wherein said management apparatus further comprises an abnormal condition notifying unit connected to said abnormal condition removal determination unit for notifying a center operator of the detected abnormal condition when the corresponding abnormal condition removal information has not been received within a first predetermined amount of time t_1 since the reception of the abnormal condition information at the management apparatus.

39. The remote management system according to claim 34 wherein said second communication unit receives a power activation report at the management apparatus from the originating managed apparatus after a main power supply of the originating managed apparatus had been temporarily switched off for subsequent power activation prior to receiving the abnormal condition removal information, claim 39 further comprising an abnormal condition notifying unit for notifying a center operator of the detected abnormal condition if the power activation report has been received within a first predetermined amount of time t_1 since the reception of the

abnormal condition information at the management apparatus and the corresponding abnormal condition removal information has not been received from the originating managed apparatus within a second predetermined amount of time t_2 since the reception of the power activation report at the management apparatus.

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40. The remote management system according to claim 34 wherein said second communication unit receives a power activation report at the management apparatus from the originating managed apparatus after a main power supply of the originating managed apparatus had been temporarily switched off for subsequent power activation prior to receiving the abnormal condition removal information, said abnormal condition removal determination unit determining that the previously detected abnormal condition has not been removed by the temporarily switching off of the main power supply of the originating managed apparatus if the corresponding abnormal condition removal information has not been received from the originating managed apparatus within a second predetermined amount of time t_2 since the reception of the power activation report at the management apparatus.

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41. The remote management system according to claim 40 wherein if the power activation report has been received within a first predetermined amount of time t_1 since the reception of the abnormal condition information at the management apparatus, claim 41 further comprising an abnormal condition notifying unit for notifying a center operator of the detected abnormal condition.

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42. The remote management system according to any one of claims 38, 39 and 41 wherein said management apparatus further comprises:

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a user information storing unit connected to said abnormal condition removal determination unit for storing user information for each of the managed apparatuses, said abnormal condition removal determination unit determining the first predetermined amount of time t_1 based upon the stored user information.

43. The remote management system according to any one of claims 39 and 41 wherein said management apparatus further comprises:

a device information storing unit connected to said abnormal condition removal determination unit for storing device information for each of the managed apparatuses, said
5 abnormal condition removal determination unit determining the second predetermined amount of time t2 based upon the stored device information.

44. The remote management system according to claim 34 wherein the abnormal condition information, the abnormal condition removal call and the power activation report are written in a
10 predetermined structured language.